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The Amplifier - v. 6, no. 15

Associated Students of the Montana School of Mines

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The Montana School of Mines AMPLIFIER



Volume 6, No. 15

PUBLISHED BY THE ASSOCIATED STUDENTS OF THE MONTANA SCHOOL OF MINES

Friday, June 3, 1960

Forty-Two Degrees To Be Given

Forty-two degrees for work in course will be awarded at the sixtieth commencement of Montana School of Mines on Monday, June 6 at 8 p.m. There are nine graduate and thirty-three undergraduate degrees.

The recipients of the nine graduate degrees follow: Master of Science in Mining Engineering, Donald R. Corson, Bigfork and Sidney B. Peyton, Butte; Master of Science in Metallurgical Engineering, Harold L. Collidge, Jr., Lewistown and Calvin L. Stevenson, Anaconda; Master of Science in Mineral Dressing Engineering, Johannes P. Dreyer, Kamieskroon, South Africa; Albert R. Rule, Butte; Donald E. Zipperian, Great Falls; Master of Science in Petroleum Engineering, Lilburn H. Lueck, Ennis; Master of Science in Geology, Kenneth F. Fox, Jr., Hardin, Montana.

Those receiving undergraduate degrees are: Bachelor of Science in Mining Engineering, Richard W. Banghart, Tsumeb, South Africa; James P. Connell (with honor) State College, Pennsylvania; Kenneth H. Erickson, Grand Rapids, Minnesota; James C. Kirchner, Fountain City, Wisconsin; Robert Ray Utter, Eureka, Montana; Bachelor of Science in Metallurgical Engineering, Arthur C. Bigley, Jr., Anaconda, John G. Bjeleitch, Butte; William R. Byrne, Butte; James F. Donovan, Anaconda; Raymond Dugdale, Butte; Leonard Greeley, Great Falls; Eldon J. Nicholson, Great Falls; James E. Thompson, Butte; Bachelor of Science in Geological Engineering (Petroleum Option), Javaid Munir Alvi, Gujranwala, Pakistan; Harvey J. Hannah, Shelby; Donald K. Roberts, Whitehall; Paul J. Schultz, Cicero, Illinois; Arthur L. Story, Cut Bank; Richard R. Vincelette, Billings (with high honor); Bachelor of Science in Petroleum Engineering, Javaid Munir Alvir, Gujranwala, Pakistan; Clif-

ford D. Anderson, Butte; William G. Callaway, Jr., Great Falls; Walter I. Enderlin, San Francisco; Kelly P. Hemmert, Butte; Robert W. Hoy, Butte; Robert G. Mock, Butte; Robert T. Rask, Butte; Syed Hamid Raza, Quetta, Pakistan; Gary W. Riley, Roundup, Montana; Marvin L. Smith, Great Falls; Douglas H. Wadman, Cut Bank.

In addition to the degrees in course, an honorary Doctor of Engineering degree, honoris causa, will be conferred upon Wayne E. Glenn, the commencement speaker. Four professional degrees will be conferred on Edward P. Cadwell, Walter E. Duncan, both Mineral Dressing Engineer, and William H. Love, and Neil Arthur O'Donnell, both Engineer of Mines.

Special acknowledgement of Dr. Reno H. Sales' many contributions to science will be made by Dr. Edwin G. Koch, president of Montana School of Mines.

Copper Lounge Furniture Due

Dr. Koch announced recently that bids for the Copper Lounge furniture have been let, and that the building would be open for full use by the beginning of school next fall.

Dr. Koch on EAC

Dr. Edwin G. Koch, president of Montana School of Mines, has accepted appointment to the Education Advisory Committee of the Upper Midwest Research and Development Council.

The Council, jointly with the University of Minnesota, is sponsoring an economic study of the Ninth Federal Reserve District with the hope of accelerating economic growth on a sound basis throughout the area. It is financed by the Ford Foundation and by business.

The Education Advisory Committee will render advice in special cases. It will be an integral partner with committees on government, agriculture, labor and business.

Miners Baseball Conference Champs



Mines is proud to present the Oredigger nine that brought the conference title back to our school—the first time since 1951—by defeating Western 7 to 4 in nine innings.

Mineral Dressing Seminars Given

On Wednesday, May 18, Albert R. Rule, who is a graduate student, gave his continuation of his February 17 seminar, which was entitled "Determination of Electrokinetic Potential and Surface Charge for Highway Aggregates." He presented and described the progress he made since his last seminar. He discussed the relationship between Electrokinetic Potential and the adhesion of an aggregate to an asphaltic emulsion. He explained how highway surfaces can be improved by selecting the proper aggregate-emulsion combination through Electrokinetic studies.

On Thursday, May 19, Donald E. Zipperian, also a graduate student, presented his seminar entitled "Emulsion Flotation of a Nonmagnetic Taconic Ore." The amenability to beneficiation of a Mesabi Range Taconite ore has been the subject of his investigation. Froth flotation, high-oil-emulsion flotation, and low-oil-emulsion system proved to be capable of recovering slimed values and emphasis has been directed toward evaluating this system.

Changes in percentage composition of the emulsion system have been analyzed in terms of flotation results. Also, the effect of some modifying and controlling reagents have been given consideration.

Inversion and stability of the emulsion system have been examined by electrical resistance measurements. These have been related to flotation results. Aided by experimental evidence, a qualitative hypothesis of the mechanism of the flotation reaction has been extended.

Interested faculty and students attended both of the well-presented seminars.

Miners Top Western 7-4

On Saturday, May 21, the Montana School of Mines took the conference baseball title by defeating Western 7 to 4. It was the first title that the Mines has won since 1951. The final game came as a fitting climax to a fine season turned in by the Oredigger nine. The squad was under the able direction of Bill Cullen, oldtime star and president of the Copper League. Duggan Memorial Park was the scene of the annual tournament play.

Pete Cross and Ken Erickson each pitched a victory and both played the outfield for the game they were hurling. Both men turned in fine days at the plate

Corson Conducts Seminar

On May 20, Mr. Don Corson spoke before a seminar on the "Application of Statistical Analysis on Pilot Plant Research". The seminar included a discussion, an interpretation of the results, and a statistical analysis of Mr. Corson's thesis.

Mr. Corson outlined the techniques and interpreted the results of his study on slurry and pipeline flow of a pilot plant. He also explained how his techniques differed from the conventional methods of study on slurry and pipeline flow.

Circle K To Picnic

At the last meeting of the 1959-60 school year the members of Circle K laid the ground work for its annual picnic. The picnic is scheduled to be held after final examinations at Larry Judd's ranch at Silver Star.

Following the discussion of the picnic, John Ruffatto, Circle K's newly elected president, took charge of the meeting. Mr. Ruffatto outlined several plans for the 1960-61 school year and then adjourned the meeting.

to compliment their work on the mound.

In the morning game Pete Gross worked behind errorless support and pitched a three hitter to defeat Northern Montana of Havre by a score of 3 to 0. The hitting of Dan Trbovich and Tom Liebsch was a key factor for the Mines victory. In the other morning game Western defeated Rocky by 4 to 3 to earn the right to face the Miners in the final.

Northern annexed the consolation round by defeating Rocky in the afternoon opener by a score of 8 to 6.

The first three games were played over the seven inning route while the final game went nine innings.

A big seventh inning was the deciding factor for the Mines. In that inning they piled up five runs to ice the issue. Dick Crnich opened the inning by beating out a dropped third strike. Liebsch then proceeded to crack out a double which sent Crnich home. Erickson singled to send Liebsch home and Bronson walked to set the stage for Gross's triple which sent Erickson and Bronson home. A bad throw allowed Gross to come home and complete the inning.

Three errors and a single by Deglow accounted for three runs in the eighth for Western but they were not enough to overtake the Mines. Two errors in the ninth put two men on base for Western but Erickson tightened up and closed up the inning unhurt.

The Box Score:									
Western	ab	r	h	bi	Mines	ab	r	h	bi
Adams 2b	3	1	1	0	Dwyer cf	4	1	2	0
Thompson 3b	3	1	2	0	Trbovich ss	3	1	1	0
Herrington ss	4	1	1	0	Crnich lf	4	1	1	0
Warren cf	2	1	1	0	Liebsch 1b	4	1	1	2
Deglow of	2	0	1	2	Erickson p	4	1	2	2
Slovak 1b	3	0	0	0	Bronson 2b	4	1	1	0
Erwin rf	4	0	1	0	Kotow c	4	0	0	0
Nehls lf,p	4	0	1	0	Quillie rf	3	0	1	0
Campbell c	2	0	0	0	Brown rf	1	0	0	0
Armstrong c	2	0	0	0	Gross rf	3	1	1	2
McKinney p	2	0	1	0					
Hogart lf	1	0	0	0					
Totals	32	4	8	8	Totals	37	7	10	6
x—Struck out for Brown in 4th									
R H E									
Western	100	000	030	—4	8	3			
Mines	100	001	50x	—7	10	6			



THE COPPER LOUNGE, suddenly transformed into a scene of merriment and festivity, was the site of Montana School of Mines annual Junior Prom held Saturday night, May 21. Dancing to the music of a local band, the prom lasted until 1:00 a.m., and was enjoyed by all.

Coming Events

JUNE—

- 3—No classes
- Removal of campus cars for cleanup
- 4—Exams start at 9:00 a.m.
- Alumni dinner for seniors at Finlen
- 6—Senior luncheon for seniors at country club
- Luncheon for senior wives at Finlen
- Commencement 8:00 P.M.
- 10—Semester ends

The Amplifier

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EDITORIAL

With this issue of the Amplifier, the school year is—journalistically speaking—over. In continuation of our editorial policy throughout the year, however, this last editorial will avoid the “good luck graduating seniors” and “have a nice summer type of writing. In continuation of our policy of writing critically, this editorial will be devoted to next year’s football team—or rather its abolition.

Football is an integral part of the “great American scene.” Fully as much as the turning of the leaves, football symbolizes autumn in America. Football is yelling, color bands, injury, a nip on the sly, the smell of hot dogs, a blanket to huddle in. Football is a tradition.

Football is a tradition. Football, like so many traditions, is too often accepted without question. It happens, seemingly automatically, every year in nearly every college across the nation. It has been only quite recently, in fact, that some of the colleges have looked at their athletic programs, especially that of football, objectively. Their findings have, in several cases, led to the discontinuance of intercollegiate football.

It is time that Montana School of Mines looked objectively at its football program.

The last football game a Mines team won was— well when was it? No one seems to recall exactly. Some seem to remember hearing about one in 1949, others think it was six or seven years ago. Everybody is sure of one thing though; it was before they came to school here.

This last season’s football team at the Mines was successful by Mines’ standards. They scored at least one touchdown in every game, But still, there were seldom 22 men out for a practice. How can a team hope to win when they can’t even scrimmage? And when the Mines played Eastern this year there were 17 Miners warming-up on one end of the field and 60 Eastern players on the other. And then two of the Mines’ players didn’t even get into the game! This is sport?

This fall \$2244.81 was taken out of the student body treasury for football. This is not an impressive figure as college football costs go, but it seems to gain stature when one considers that the total money in the treasury was \$7950.

The School of Mines is in a football dilemma. The cause of this dilemma is not the fault of the coach or the players; it is more basic than that. The cause is that we are the smallest school in the league; the cause is that we are the only school in the league which doesn’t give athletic scholarships; the cause is that a large number of the athletes who come here flunk out or quit sports in an effort not to flunk out.

Does it make sense to field a team which has absolutely no chance of winning? Does it make sense to support a team at the cost of not giving the clubs and campus organizations the money they need? Offhand, it appears that the only reason the School of Mines fields a football team is from habit. No logical reasons are apparent.

The power to maintain or dissolve the football team rests with the student council. Without an appropriation by the council of the student body’s money there can be no team. It is the purpose of this editorial to propose that this step be taken—that the appropriation for football be refused.

Football died a long time ago at the School of Mines; it’s time that appropriate steps were taken to bury it.



College Girls and Drinking

Does a college girl have to drink to be one of the “college gang?” Before I attempt to answer this, let us look at some of the things which may cause a girl in college to tip the bottle.

In the first place, if the girl’s friends drink this will have a great effect on her own attitude toward drinking and will tend, in some cases, to change her attitude. She may be torn between the devil and the deep blue sea in that she may not want to drink but has to drink if she wishes to keep her drinking friends. In a case of this nature the girl will have only two alternatives: to start drinking herself or find new non-drinking friends.

Many girls who leave home for the first time may be inclined to try new fads or new forms of entertainment which they would not try while living at home for fear of being punished. I know of one girl who was so strictly disciplined at home that she ran wild her first year of college because as she stated, “It sure feels good to be out from under the hammer!”

A few college girls I have talked to recently explained that they drink or stay home. In part, this is true because many boys drink and when they are out on a date, like to impress the girl by the big wheel routine and in many cases drinking is essential to this routine.

An answer to the question, therefore, must be based upon the circumstances a girl finds herself in and also the number and type of pressures that are brought to bear on her. In fact, the question does not involve a definite answer acceptable to all but what the question does involve is largely a matter of personal opinion. In my opinion, there may be many cases where a girl is forced (by social pressures) to drink, but most times a girl does not have to drink. She does so merely because she likes to, and also because she becomes very fond of the change in social life that drinking effects.

Consider the Source

By M. A. Becken

There comes a time in every news reporter’s career, when he wonders if he can afford the luxury of integrity. Looking over past articles, I cannot help wondering whether I have gone far enough or too far in presenting my prejudiced opinion of the facts. This is the last issue of the paper for this school term and probably the last I’ll ever have the opportunity to work on. I should take advantage of this and write a prize winning essay on my opinion of the Mines and its students.

First, I should like to make a slight confession. All stories this semester concerning the co-eds and their many antics have been my work (some might say dirty). Feeling that I’m in (or was in) a better position than the majority of the paper’s staff members to get the inside story, it was my duty to do so. In answer to any retort from this elite group or any other group which it seems I have offended, “If the shoe fits, put it on.” But this may, and probably does, give the reader the wrong impression. During the past year, I have been a member of this group and active in everything it has done.

In a recent article, I also made comments on the typical Mines’ Engineer, but needless to say, being a mere general student, anything I may say would be like water off a duck’s back. After nine months, I have found that the Mines’ engineer is really superior (in what, I have yet to discover), I shall retract an unguarded statement made to one Mines’ engineer shortly after enrolling in this school. To state anything definite about the engineering students at the Mines would be ridiculous. In general, they are a fine group of young men seeking their proud professions, suspicious of anything and anyone that might degrade that profession, and extremely jealous of the fine standards of their chosen school. Taking

Northeast Quarter . . .

By JACK THOMAS

With the closing of another school year and the departing of many people who may never see each other again, one looks back hoping to find the keys of the past which open the future. I find myself wondering about the school on the hill and its position in the years to come.

First, one must look to the past of MSM and try to reason why a school which once was a leader in the field of Engineering seems to have slipped back to a position much lower in the academic standards of the country. Surely, many reasons exist and to discuss them all in a small column is impossible. However, there is one which may, to some, seem to pose no threat to the school, but when looked at closer one finds that this problem hurts now, and in the future could hurt much more.

There are many who believe that the Montana School Of Mines should enlarge its non-technical curriculums. It seems like a nice gesture, but these same people if given the chance would carry it to extremes. They believe the school should be open and provide courses for anyone who wishes to take anything from modern dance to basket weaving.

The Montana School of Mines is an engineering school with ample equipment and teachers to place it with the leaders in minerals engineering field. Therefore, if I may be granted one wish, please don’t let the people of the state transform The Montana School of Mines to The Butte Junior College.

Sigma Rho Elects

On May 26, the Sigma Rho Fraternity held a meeting for the purpose of electing their new officers. The officers that were elected were David Robertson, Archon; Alex Mondlak, Vice Archon; Michael Keegan, Secretary; Robert Johnson, Treasurer; Robert Hicks, Scribe, and Larry Katcher, Sergeant-at-Arms.

everything into consideration, one can safely say that the Mines is a pretty wonderful place and those that inhabit her halls are strange, yet still wonderful, too. This phase of my education (it has been that) and my stay at the Mines I shall always remember, though, at times, I wish I could forget it.

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TOP-NOTCH OREDIGGER HURLERS—Pictured above are Pete Gross (left) and Ken Erickson (right), the two hurlers who pitched the Orediggers to the Montana Collegiate Conference Championship. Gross pitched the Orediggers to victory over the Northern Lights in the semi-finals and Erickson pitched the Championship game, which the Orediggers won 7-4 over Western Montana.

Western Rules Track and Field

Western Montana College of Education of Dillon won the Montana College track and field championship by a wide margin here last Saturday. They had four times as many points as their nearest competitors.

Of the 14 events run off they placed first in 12 of them. In all they garnered 97 and 1/2 points. The nearest rival was Eastern of Billings. Rocky Mountain also of Billings was third, followed by Northern of Havre, and Montana Mines was last. Carroll College of Helena did not have any entries in the meet.

Three records fell during the meet. Dick Carpenter of Rocky threw the discus for 144-6 1/2 and he also won the shotput. Frank Cabbage of Western set an outstanding record with a tremendous throw of 205-9 for the javelin. Jerry Bennett also of Western set a new record of 12-feet-6 in the polevault.

Point winners:

High Hurdles—Miller, Western; 2 Vallance, Western; 3 Newbury, Eastern; 4 Beck, Eastern. Time :16.5.

100-Yard Dash—Robinson, Western; 2 Dover, Eastern; 3 Kelley, Rocky; 4 Kovatch, Northern. Time :10.2.

Mile—1 Nau, Western; 2 Cosgriffe, Western; 3 Wilcox, Rocky; 4 Knudson, Northern. Time 4:46.9.

440—1 Taylor, Western; 2 Selvig, Western; 3 Kron, Northern; 4 Weaver, Eastern. Time :52.1.

220—1 Varland, Western; 2 Dover, Eastern; 3 Robinson, Western; 4 Weaver, Eastern. Time :22.1.

Erickson Elected Honorary Captain

At a dinner held at the Vegas Club in honor of the Mines Championship baseball team on Monday, May 23, Ken Erickson was elected captain of the team. Ken is a senior graduating in Mining and has lettered three years in baseball competition. This year, as a pitcher, Ken was undefeated, winning two games. He pitched the Championship game and held Western Montana to four runs. He was the only senior on the team.

Low Hurdles—1 Scott, Western; 2 Barber, Western; 3 Beck, Eastern; 4 Wrzesinski, Rocky. Time :26.5.

880—1 Nay, Western; 2 Olson, Western; 3 Fields, Rocky; 4 Kirschner, Western. Time 2:06.1.

Pole Vault—1 Bennett, Western; 2 Dunlap, Western; 3-4 tie Dwyer of Mines and Wrzesinski of Rocky. Height 12' 6" (record).

Shotput—1 Carpenter, Rocky, 2 Sharp, Western, 3 Dunlap, Western. Distance 46' 2 1/4".

Javelin—Cabbage, Western, 2 Selvig, Western, 3 Kielbusch, Western. Distance 305-9 (record).

Discus—1 Carpenter, Rocky, 2 Haines, Eastern, 3 Dunlap, Western. Distance 144-6 1/2 (record).

Broad Jump—1 Varland, Western, 2 Scott, Western, 3 Kovtan, Northern. Distance 21-7 1/4.

High Jump—1 Miller, Western, 2 Haines, Northern, 3 Fletcher, Eastern. Height 12.

Relay race—Western, Northern, Mines. Time 3:37.9.

Theta Tau Wins Crown

The Intramural Championship was won by the Theta Tau fraternity, who recently won the softball championship, to give them a total of 219 points for the 1959-60 school year. A first place trophy has also been awarded this fraternity. The Independents placed second with 203 points and the Sigma Rho third with 91.

The Intramural race has been close all year and was not decided until the softball league was completed. All intramural activities for this year have been completed and would have to be termed "very successful" for the number of Mines' male students who have competed and had a lot of fun. Here is a recap of the years champions and runners-up in each of the sports activities covered by this program.

Basketball

1. Goof's—Gordon Austin, John Bennett, Terry James, Mike Keegan, Bob Laughlin, Ed Lueck, Bill Pickard, John Thomas and Robert Bills.

2. Theta Tau No. 1—Dave Cushing, Bob Donaldson, Harvey Hannah, Gay Kravik and Don Roberts.

Volleyball

1. Theta Tau No. 1 — Art Boettcher, Ken Erickson, Pete Gross, Harvey Hannah, Gay Kravik, Al Raihl and Don Roberts.

2. Seniors—Jim Donovan, Kelley Hemmert, Mike Maddocks, Don Mahagin, Don McMillan, Bob Mock, Bob Rask, Marvin Smith and John Thomas.

Softball

1. Theta Tau—Don Roberts, Gay Kravik, Bob Donaldson, Jerry Blake, Art Boettcher, Dick Vincelle, Darrell Day, Doug Wadman, George Grandy, Al Raihl, Pete Atkinson, John Burke, Al Martin and Dave Cushing.

2. Sigma Rho—Donald Rolfe, Dave Greenberg, Webb Garey, Al Winters, Francis Larvie, Don Bork, Howard Forsythe, Bill Harris, Kurt Toegel and Gordon Austin.

Table Tennis

Singles:

1. Manuel Munoz.
2. Hamid Raza.

Doubles:

1. Teimoor Mantashi—Hamid Raza.
2. Manuel Galup — Manuel Munoz.

Handball

Singles:

1. Marv Smith.
2. Don Donner.

Badminton

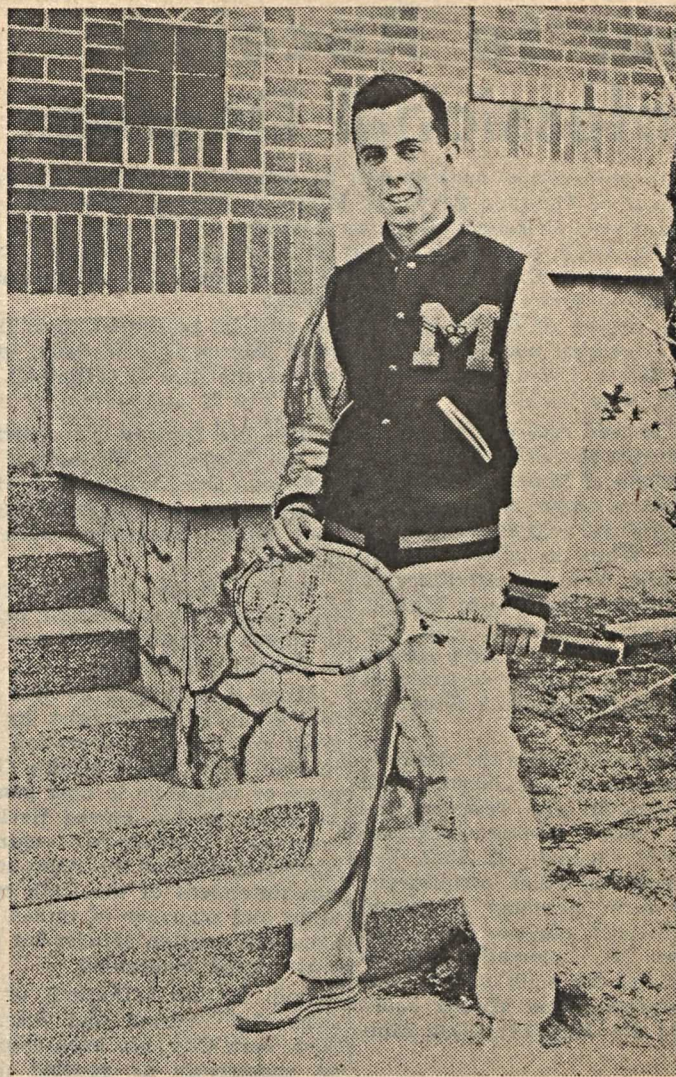
1. Hamid Raza.
2. Manuel Munoz.

Rocky Wins Golf Tourney

Ralph Hawkins of Rocky Mountain walked away with the intercollegiate golf play here during the sports carnival. The first day of the tournament found Ralph shooting a neat 75 which seemed to be challenged only by the wind. The other entrants from the Mines, Carroll and Western were far back with the second day of play cancelled because of snow.

The tribe of cannibals were in a state of unrest because the chief was not feeling well.

When the medicine man was asked what was wrong with the chief he said: "He has hay fever." "Well, serves him right," came the reply. "I told him not to eat that grass widow."



Munoz To Represent District Five At Kansas City

Manuel Munoz, School of Mines tennis star, will be the representative from District 5 to the National Intercollegiate Tennis Tournament to be held in Kansas City, Missouri, June 9-11. He has won the Conference Championship for the past two years in the singles and doubles. Last year he and Johannes Dreyer teamed up to win the doubles crown; this year he and Bill Thompson repeated. He has an unbelievable record since coming to the United States two years ago; he has yet to be defeated.

Manuel's hometown is Antofagasta, Chile, where tennis is a popular sport. In 1953 he was the Chilean Champion and in 1954 was runner-up for the South American Championship.

This past season he has won first place in three tournaments in which he has competed. He won first place in the Montana State College Invitational Meet held last month in Bozeman. Then, teaming up with Bill Thompson they copped the doubles crown in that tourney. Manuel also won the singles district crown in a tournament held in Dillon on May 14. He and Thompson also copped the doubles crown there. Last weekend he competed in the first annual Memorial Day Tennis Tournament in Bozeman where he won the students division championship in the singles competition. Then in the doubles, where there were no divisions, he teamed up with Russ Smith of Butte to win the doubles title also.

Manuel is the most outstanding tennis player ever to be at the School of Mines campus and for that matter, the most outstanding player in this entire area.

He will leave Butte by plane on June 8 and will play at the Rock Hill Tennis Club in Kansas City, Missouri, on June 9, 10 and 11.

Tennis Tourney Cancelled

The Montana Intercollegiate Conference tennis tournament, in conjunction with the Spring Sports Carnival, was cancelled last week due to snow and cold weather. Manuel Munoz won the event last year and was unable to defend his title. The tournament will not be held at a later date because the closing of school is so near. Manuel and Bill Thompson were both awarded school monograms in tennis.

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Four to Receive Professional Degrees

Four professional degrees will be awarded at the sixtieth commencement of Montana School of Mines on Monday, June 6th.

The degree of Mineral Dressing Engineer will be awarded to Edward P. Cadwell, chief metallurgist of the American Cyanamid Company, New York City and to Walter E. Duncan, Natural Resources Institute, University of Wyoming, Laramie.

The degree of Engineer of Mines will be presented to William H. Love, general manager of the Hecla Mining Co., Wallace, Idaho and to Neil A. O'Donnell, senior partner in the firm of O'Donnell and Schmidt, New York City.

Mr. Cadwell received his bachelor's degree in mining from Montana School of Mines in 1932 and his master's degree in metallurgy from the Butte engineering college in 1937. While in college he received the Woman's Auxiliary to the American Institute of Mining, Metallurgical and Petroleum Engineers scholarship in 1930. He has served as a visiting lecturer at the University of Chile Graduate School.

He had worked for the Anaconda Company as metallurgist, mill superintendent and research engineer before joining American Cyanamid Company in 1947. Before becoming chief metallurgist of the latter company he served it as research engineer and field engineer. Mr. Caldwell has written articles for such publications as Engineering and Mining Journal, De Re Metallica, Los Minerales.

Walter E. Duncan, professor of chemical engineering at the University of Wyoming, works for the University's Natural Resources Research Institute.

Mr. Duncan attended Montana State College, Bozeman, from which he received his Bachelor of Science Degree in Chemical Engineering in 1933. Two years later he was awarded the degree of Master of Science in Metallurgical Engineering by Montana School of Mines. He attended Missouri School of Mines, Rolla, from 1935 to 1937.

From 1937 to 1939, Mr. Duncan was a research metallurgist at the Missouri Mining Experiment Station, Rolla. Beginning in 1939 he was employed as a metallurgist by the Mahoning Mining Company, Rosiclare, Illinois. In 1946 he joined the Ozark-Mahoning Company, Tulsa as a chemical and metallurgical engineer. In 1949 he joined the Natural Resource Research Institute.

In 1950 Mr. Duncan served the Peruvian Government as a consulting engineer studying mineral problems and preparing reports to be used as the basis of international loan applications.

He has been a research fellow both at Montana School of Mines and at Missouri School of Mines.

In 1955 Mr. Duncan was chairman of the Wyoming Section of the American Chemical Society. He is listed in "Who's Who in Engineering" and "American Men of Science."

William H. Love was graduated with honors from Montana School of Mines in 1946. His degree was in mining engineering.

From 1946 to 1948 he was employed as a metallurgist by the Sink and Float Corporation and in 1948 joined Hecla Mining Company of which he is now general manager. He has served Hecla as engineer, mechanical engineer, superintendent of the Atlas mine, superintendent of the Utah operation and manager of mines. Mr. Love has written articles for several mining magazines.

Neil Arthur O'Donnell of the firm of O'Donnell and Schmidt, New York City, has been employed successively as general manager of the Compania Minera Unificada del Cerro de Potosi, chief of the Minor Base Metals Section of the Board of Economic Warfare, vice-president and general manager of the Idaho-Maryland Mines Corporation and in various capacities by Ventures Limited between 1951 and 1956.

Since 1951 he has spent considerable time examining world laterite deposits and studies of means of low cost operation as sources of nickel, cobalt and iron.

Mr. O'Donnell was graduated from Montana School of Mines in 1921 with the degree of Mining Engineer.

He has written articles dealing with gold for such magazines as the "Commercial and Financial Chronicle", "American Mining Congress Journal", Mining World" and "Northern Miner".

To be eligible to receive a professional degree from Montana School of Mines it is necessary that the recipient be a graduate engineer who has established a professional career of at least ten years. Five years must have been in a definitely responsible capacity. Moreover, he must have contributed in an outstanding manner to the furtherance of his profession.



Next year's Student Council members get together in their first executive meeting. Left to right: Dan Rovig, Pete Gross, Bill Pickard, and Bill Thompson. Webb Garey is not shown.

Students Honored At Convocation

The Third Annual Honor Convocation was held on Wednesday May 25 in the Library Museum Hall. During the convocation the following awards were made:

Prof. W. A. Vine, head of the mining engineering presented the \$500 scholarship of the American Smelting and Refining Co. to Allen D. Rovig of Kalispell, who is a junior majoring in mining engineering.

Francis C. Larvie, a sophomore from Walkerville, was awarded the \$600 Gardner-Denver Scholarship.

Prof. D. H. Harnish, head of the department of petroleum engineering, announced that Gay Kravik, a junior in petroleum engineering from Havre, was the recipient of a \$300 fellowship of the Billings

Petroleum Section of the American Institute of Mining Metallurgical and Petroleum engineers. Prof. Harnish also announced that the name of the recipient of the \$3,000 Graduate fellowship from the Continental Oil Co. will be released later.

The metallurgical department awarded two scholarships. One from the American Smelting and Refining Co. for \$500 was awarded to Donald McMillan, a senior from Butte. The other was awarded to Donald Mahagin. He received the \$500 scholarship of the American Society for Metals.

The Viola Vestal Coulter Foundation Scholarship of \$200 was presented to William H. Thompson, a junior from Everett, Wash.

The Cobb Foundation scholarships were awarded to William C. Pickard and William Thompson. Each received \$100.

Robert Applegate received the

Placements Are Posted

The Montana School of Mines Placement Service announces the following placements for Senior and Graduate students. The list is not complete as some students are still considering offers and others are contemplating graduate work or service in the armed forces.

Seniors

Arthur Bigley	Aanconda Company
William R. Byrne	Texas Instruments, Inc.
James F. Donovan	United States Steel Corp. (Columbia-Geneva Steel Division)
Walter Enderlin	Halliburton Oil Well Cement Co.
Kenneth Erickson	Oliver Iron Mining Co.
George Grandy	United State Steel Corp. (Columbia-Geneva Steel Division)
Leonard Greely	Ingersoll-Rand Co.
Harvey Hannah	Public Service Commission, Colorado
Kelly P. Hemmert	Pan American Petroleum Corp.
Robert W. Hoy	Pan American Petroleum Corp.
Robert Mock	Shell Oil Company
Eldon J. Nicholson	Anaconda Company
Gary Riley	Pan American Petroleum Corp.
Don Roberts	Graduate Work
Marvin L. Smith	Shell Oil Company
Robert R. Utter	Assistantship—South Dakota School of Mines (summer work with Shell Oil Co.)

Richard Vincelette	Graduate work—Stanford University
Douglas	Graduate work (summer work with Pan American Petroleum Corp.)

Graduates:

Harold Coolidge	Inland Steel Company
Donald R. Corson	American Smelting & Refining Co.
Kenneth F. Fox, Jr.	Texaco, Inc.
Theodore S. Jordan	Vanadium Corp. of America
Lilburn Lueck	Continental Oil Co.
S. Hamid Raza	Assistantship—Pennsylvania State College
Albert Rule	Inland Steel Company
Calvin Stevenson	Allis-Chalmers Mfg. Co.
Donald Zipperian	Jones & Laughlin Steel Corp.

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Nuts 'n Bolts

By Jack Bennett

By a uranium-lead dating method of subsurface rocks in South Africa the age of the earth is four billion years old. These are the oldest rocks that were discovered near Murmansk, Russia, in 1958. These measurements are of the radio active decay and have an accuracy within an error range of a few per cent. The methods measure the radioactive decay of uranium 238, rubidium 87, and potassium 40. Rocks more than 50,-000 and less than a million years of age are dated by a radiocarbon test.

These tests have led scientists to revise the geologic time column. The revised chronology changes and pushes back the major subdivisions (periods) of past dating. The beginning of the Cambrian Period is now established at 600 million years ago instead of 520 or 560 million years. The beginning of the Devonian has been set back to 360 or 400 million years ago instead of 320 million years. The Permian period has been lengthened from 25 million years to 50 million years and has also been moved back in age. The end of the Triassic period, which was to have ended 155 million years ago, has been established at 190 million years ago. There has also been a new breakdown of the controversial Tertiary period. This new chronology of the Tertiary is based upon age measurements of volcanic ash in the western U. S. and a graded series of vertebrate fossils.

\$250 scholarship of the Butte Rotary Club.

The Gino Diamanti Scholarship of \$400 was divided to provide \$300 for Robert Coppo and \$100 for James Mazza.

Robert Hoy, a senior in petroleum engineering, was announced the winner of the Billings Petroleum Section of the AIEE student paper award.

Fee scholarships which provide for exemption from registration, incidental, and non-residential tuition fee were announced as awarded to Elvin Beardslee, Arthur Boettcher, Edward G. Davis, Llewellyn Fischer, Charles Gale, Christopher Gilette, Allen P. Herring, Robert Johnson, Michael Kegan, Sandra Mannix, Ann Perry, Marvin Senne, Charlene Sivalon, Henry E. Thompson, and George Vivian.

Montana Section AIME paper awards were presented by Prof. Stout. First prize of \$25 was award to Eldon Nicholson.

The WA-AIME presented a scholarship-loan of \$800 to Perry Bilyeu.

Acknowledgements were made to various persons and companies for any contributions which had been made within the last year.

The two fleas came out of the theatre and found the rain pouring down like crazy. The first flea turned to the other flea and asked, "Shall we walk, or take a dog?"

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BUTTE MINING BOOM

Back in July, 1896, Butte really had growing pains in its mining industry.

The mines were turning out record production. Every 24 hours 8,000 tons of ore were being hoisted to the surface and sent to the various smelters for production. The pay rolls contained more names than at any previous time in Butte's history. New companies were operating in all directions.

The sale in that month of a small block of ground near the Parrot for 800,000 showed the wonderful copper prospects of the district, a newspaper article of the day said.

It went on further to say, "The strike in the Glen-garry at a depth of 800 feet establishes the permanence and the richness of the great ledges on the flat. And leases are eagerly sought in the Meaderville district. The Speculator, now a million-dollar property, is shipping much high grade ore to Deadwood, S.D., for treatment."

THE ANACONDA COMPANY